Operating instructions

Operating Unit - hydralic

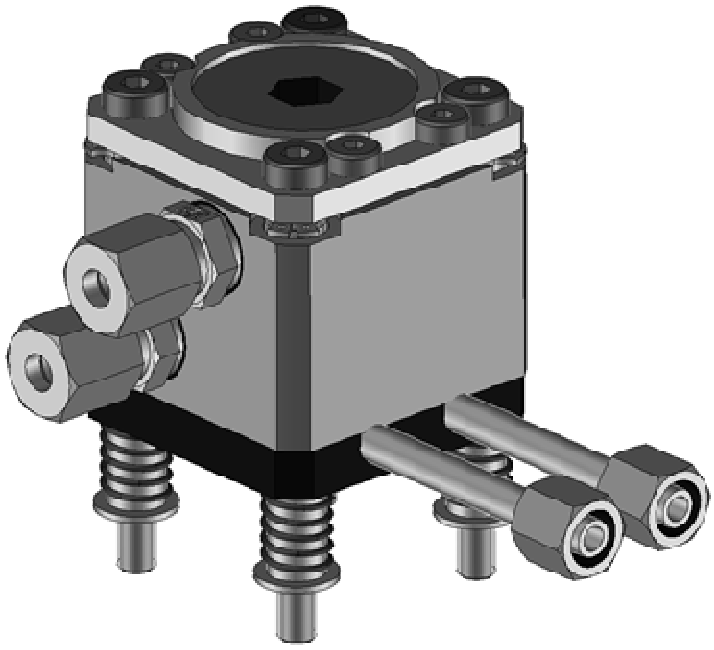
MH 50X70 LP

Article no.: 299460-01

Drawing no.: 33.011.068.03-01

For:

2016	MIKRO	NZ	Pin Ø 2
2025 / 27	ALLROUND	DNZ / DNZL / NZ	Pin Ø 3
2032 / 36	ALLROUND	DNZ / DNZL / NZ	Pin Ø 5



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Technical changes reserved

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7. 1. General safety instructions

1.1 Safety at work

The tool must be grounded! If the nozzle is operated outside the tool, then the nozzle must be grounded.

First make sure that the operating unit is ready for use and then start the heating.

An uncontrolled escape of polymer melt is possible if the hot runner system is heated up. This could happen if the injection mold is installed as well as if it's dismantled.

Attention!

Danger of crushing! Don`t reach under the Piston rod.

It's absolutely necessary to wear protective clothing.

- closed protective clothing
- protective gloves
- safety helmet
- protective hood or goggles
- safety boot

1.2 Skilled Experts

Only experts and/or trained persons are authorized to handle hot runner systems.

2. Important note

2.1 Valve pin operating

The valve pins can only be operated in heated up condition and with cooling connected to the operating unit.
Non-observance leads to pin damage. Non-observance leads to pin damage.

2.2 Medium

2.2.1 Hydraulic medium

- Don't use flammable hydraulic oil ! Maximum thermal exposure up to 80° C Consider manufacturer's instructions!
- Purity 21/18/13 according to ISO 4406.
- Deaerate tubes enough.

- Hydraulic fluid on the basis of mineral oil, HLP according to DIN 51524 part 2 (possibly HLVP according to DIN 51524 part 3) with a nominal viscosity of 32-46mm²/s. Beyond that enough separation of air and water must be provided. For the use of additives please consult the supplier for sealings.

2.2.2 Cooling medium water

1. Water quality must be according to VDI guideline 3808.
2. Recommended PH-value 7.0-8.5.
3. Cooling water temperature min 20° C up to max. 60° C (difference inlet/outlet max. 5° C)
4. Pressure max. 8 bar
5. Minimum flow rate 2 l /min. per unit.
6. Maximum 3 operating units connected in a row

Cooling

Heated up hot runner systems should only be operated with the chiller connected and running.
In case of non-observance a thermal overloading of the sealing assembly leads to a leakage or a malfunction of the operating unit.

After turning off heat you can disconnect the chiller.

3. Views + parts list / technical data

3.1 Parts view

Component parts sectional view

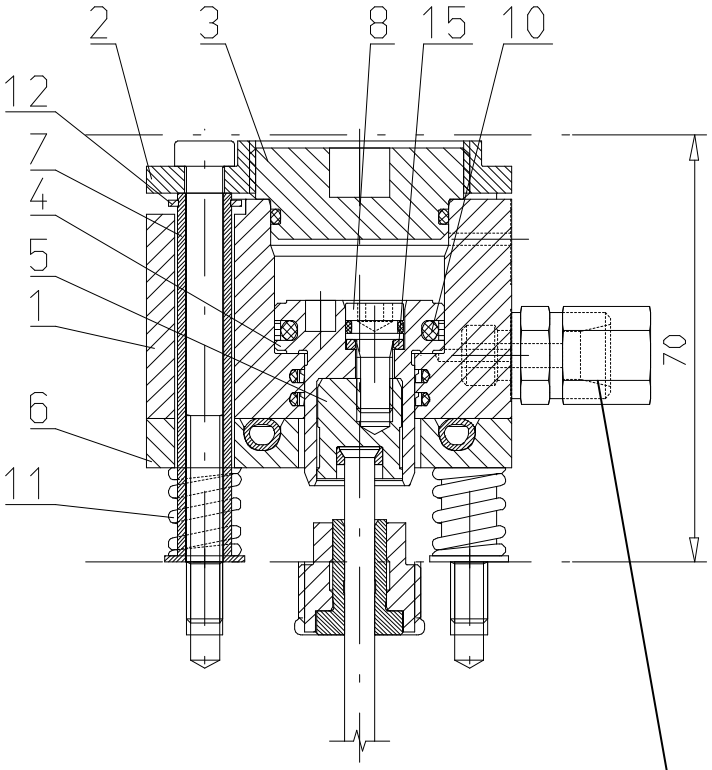


Figure 1

Component parts top view

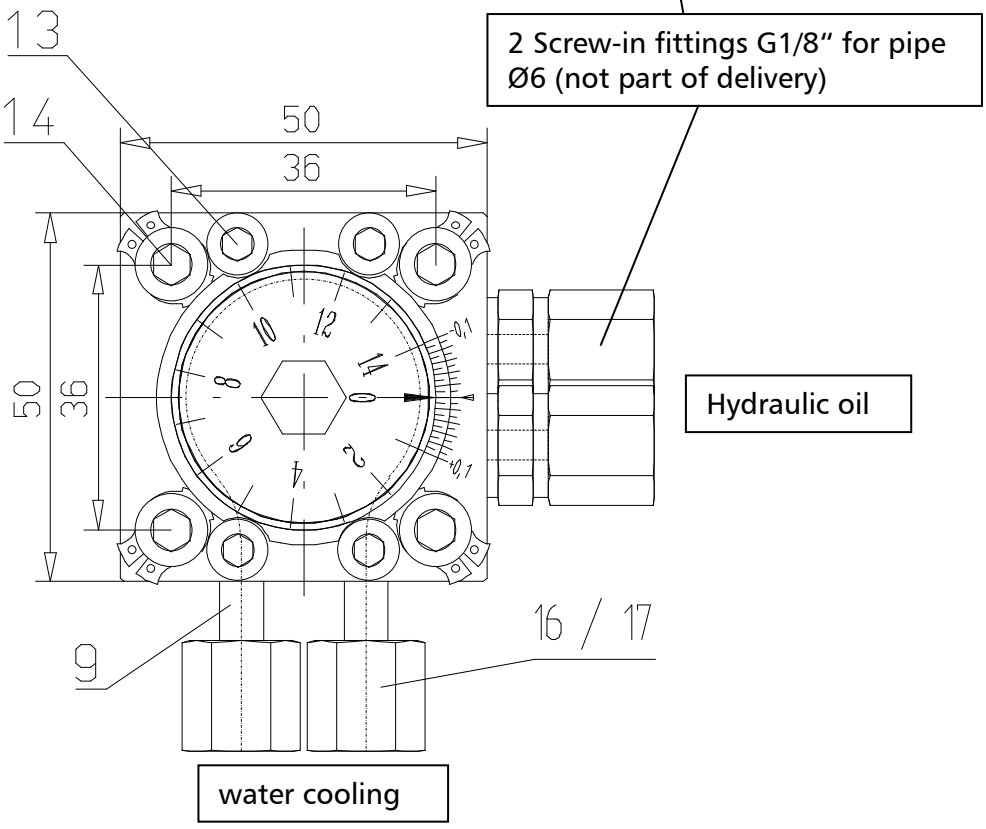


Figure 2

3.2 Stock list

Pos.-no.	Description	Piece
1	Case	1
2	Holder	1
3	Adjustment lid	1
4	Piston	1
5	Valve pin holder	1
6	Cooling plate	1
7	Spacer	4
8	Locking screw (special part)	1
9	Cooling pipe Ø 6	1
10	Seal assembly	1
11	Thrust spring	4
12	Locking ring	4
13	Allen head screw M5X10 10.9 DIN7984	4
14	Allen head screw M6X75 8.8 DIN6912	4
15	Lock ring DIN 7980	1
16	Cap nut M12 X 1,5	2
17	Compression ring Ø 6	2

3.3 Technical data

Cylinder	
outside dimensions	50 X50 X70 (Height = tool-dimension)
hydraulic pressure	60 bar
hydraulic pipe	Ø 6mm
Pin close	3624 N (piston Ø 28mm)
Pin open	2127 N (Ø 28 – Ø 18 bar)
Stroke	10 mm
oil flow rate	31 ccm/Sec. (0.2 Sec switching time)
swept volume with pin closed	6.2 ccm

Pin	
Ø 2 mm	MIKRO 2016 NZ
Ø 3 mm	Allround 2025 / 27 DNZ / DNZL / NZ
Ø 5 mm	Allround 2032 / 36 DNZ / DNZL / NZ
Pin adjustment	+ / - 1mm
Pin - uncoupling	possible

Cooling (water)	
Cooling pipe	Ø 6mm
Flow rate	Min. 2 l / min.
Temperature	20° to 60° C
Consider aftercooling time	Min. 15 min.

Tightening torques		
Pos. 8	Locking screw M6 (special screw)	10 Nm
Pos. 13	Allen head screw M5X10 10.9 DIN7984	6 Nm
Pos. 14	Allen head screw M6X75 8.8 DIN6912	12 Nm

Connections	
Cooling pipe	Pipe Ø6 compression ring with cap nut M12X1,5 (Reduction GR08/06L for tubing Ø8 not part of delivery)
Hydraulic	G 1/8" (Screw-in fitting for pipe Ø6 not part of delivery)

4.0 Pin adjustment by vernier

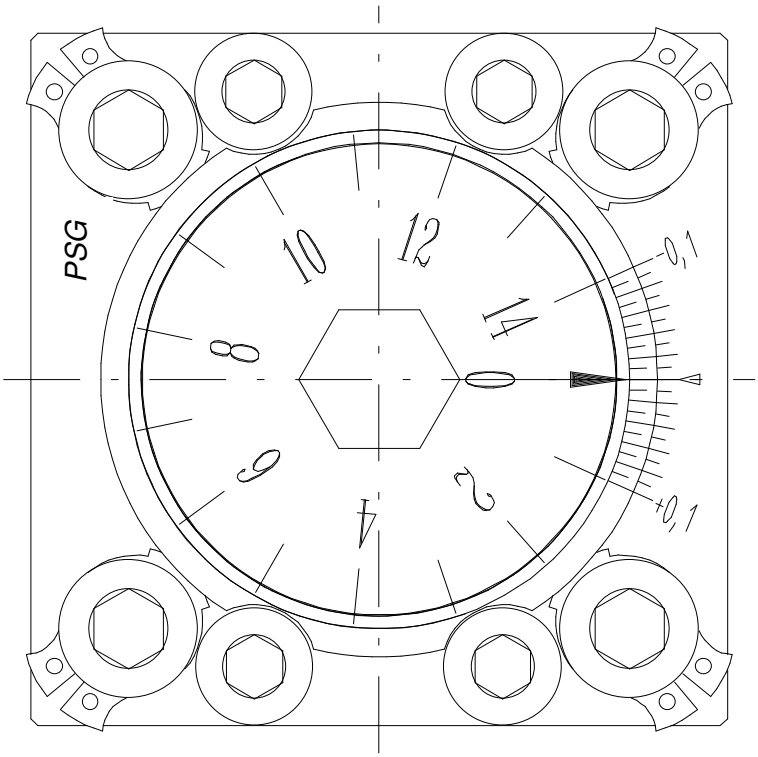


Figure 3

The figure shows the basic setting on delivery.

Each scale division from 0 to 15 is equivalent to 0.1 mm pin adjustment.

With the vernier an adjustment of about 0.01 mm possible.

Clockwise rotation = pin forward
Counterclockwise rotation = pin backward

4.1 Basic setting of the pin (general)

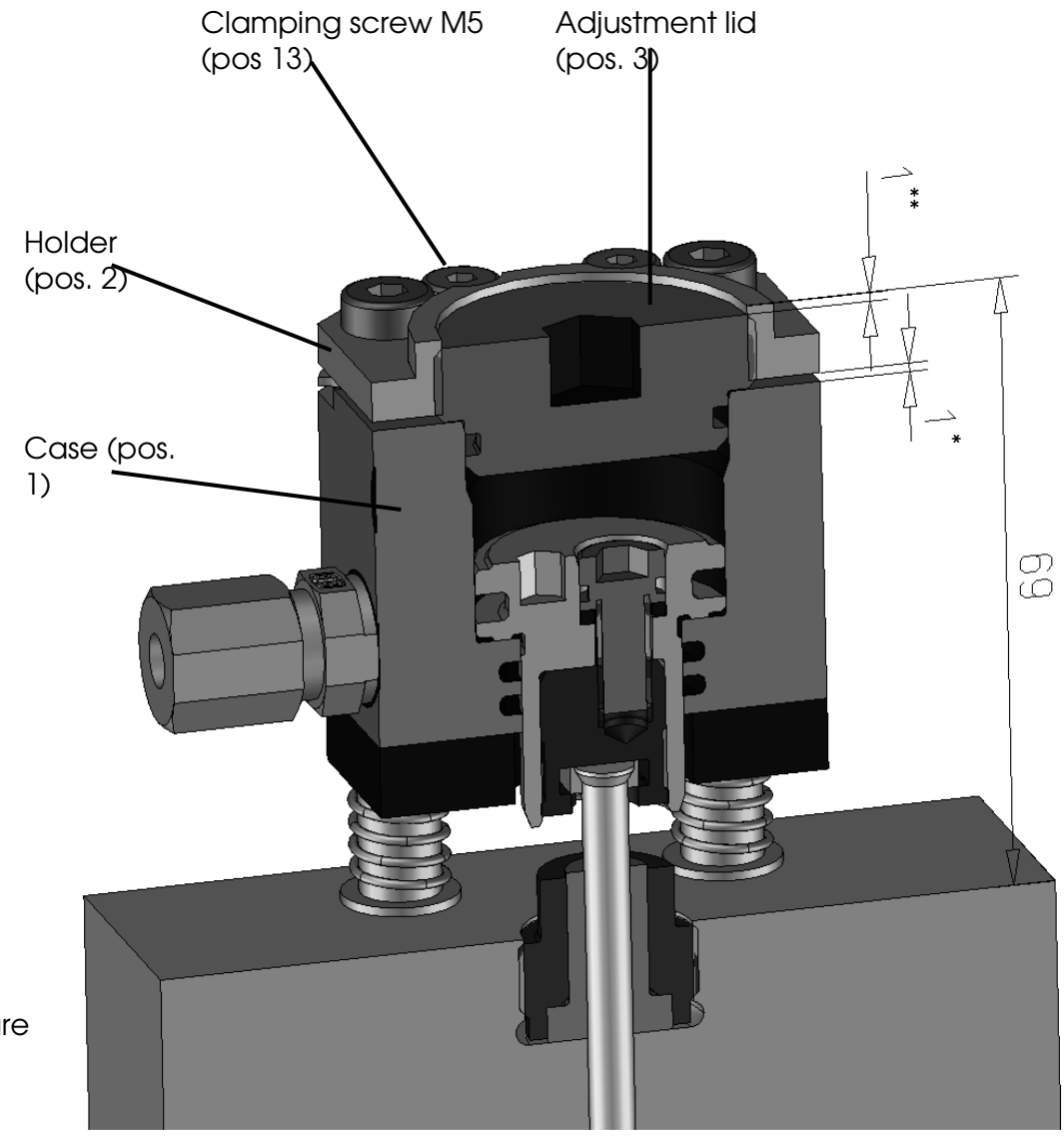


Figure 4

- During the basic setting of the pin
  the distance between holder and case is 1 mm
  The adjustment lid is located 1 mm deep in the holder.
  (adjustment ± 1mm)

- Caution ! Assemble the operating unit only in **basic setting**, otherwise there is a risk for collision in the ante-chamber.

4.1.1 Basic setting pin

The basic setting is already made by the factory.

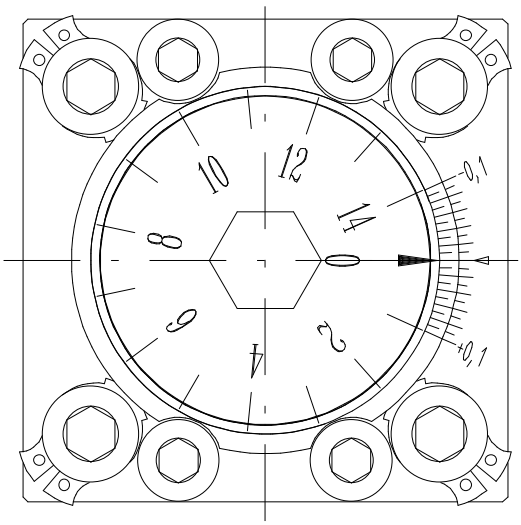


Figure 5

4.1.2

For DNZ and DNZL the pin is already adjusted.

4.1.3

- Caution ! The basic setting for gate NZ is already made by the factory. Dimensional deviation could result in a collision between ante-chamber and pin.
- Therefore operate the first pin "close" with low pressure and measure the pin position in the tool section.
- Adjust the pin position like this, that the phase (X) sticks out of the cavity.

	Ø	Min. X
2016 Mikro	2	0.05 mm
2025 / 27 ALLROUND	3	0.1 mm
2032 / 37 ALLROUND	5	0.3 mm

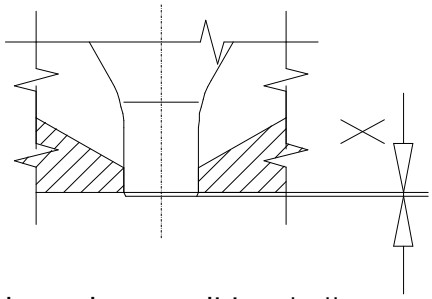


Figure 6

Please consider longer dimensions of the pin in heated up condition. In the cold condition, the needle must be short by the amount of linear expansion △L

4.1.4 Basic setting - gradually

Step 1
Change system over to pressure less!

If there is plastic inside, then the system must be heated up.

Step 2
Remove the 4 clamping screw (pos 13).

Step 3
Turn adjustment lid (pos 3) to the same height („tight fit“) as the holder (pos 2).

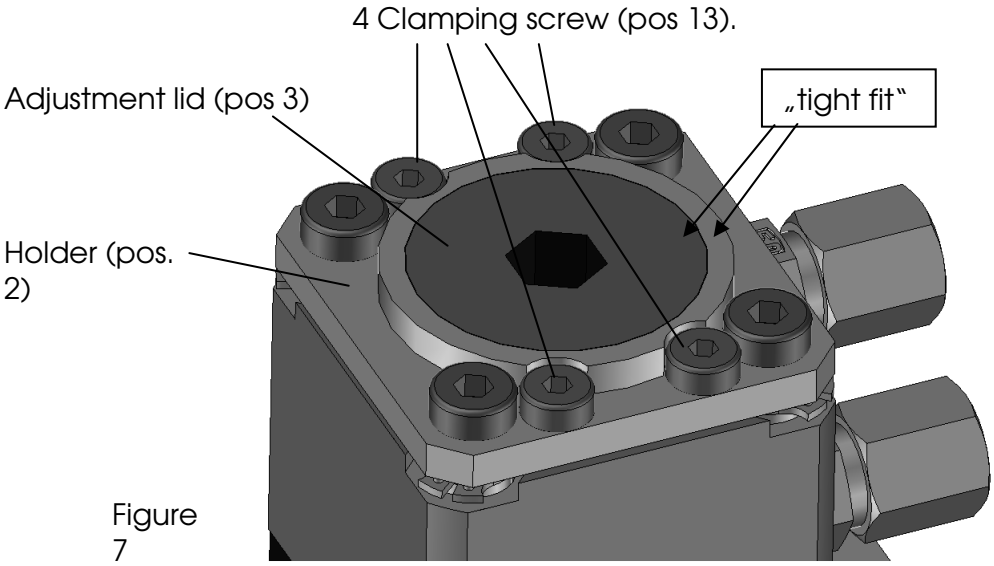


Figure 7

The scale is on the line 10.

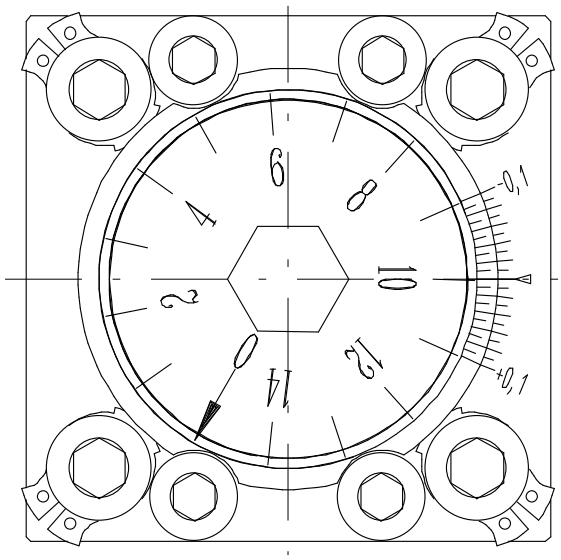


Figure 8

Step 4
Turn adjustment lid in clockwise direction to line 0.

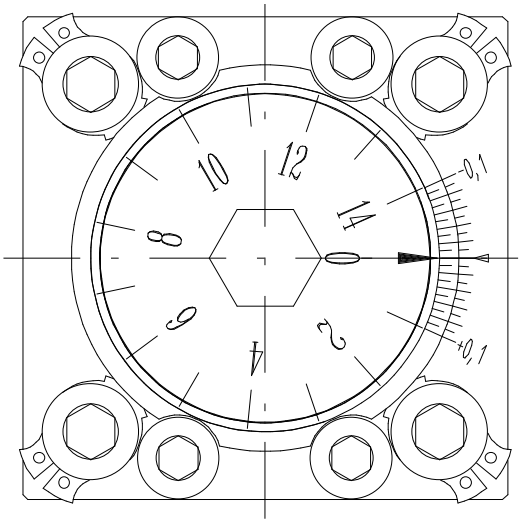


Figure 9

Step 5
Tighten the 4 clamping screws (pos 13) with torque.

Tightening torques		
Pos. 13	Allen head screw DIN 7984 M5X10 10.8	6 Nm

Now the operating unit is in basic setting.

4.2. Final setting (pin adjustment)

For gate type NZ a final setting (pin adjustment) is necessary, because of molding tolerances.

See point **4.1.3**

4.2.1

Systems filled with plastic must be heated up.

4.2.2. Final setting (pin adjustment) gradually

Please note point 4.1.2 – 4.1.4

Step 1

Change over system to pressure less!

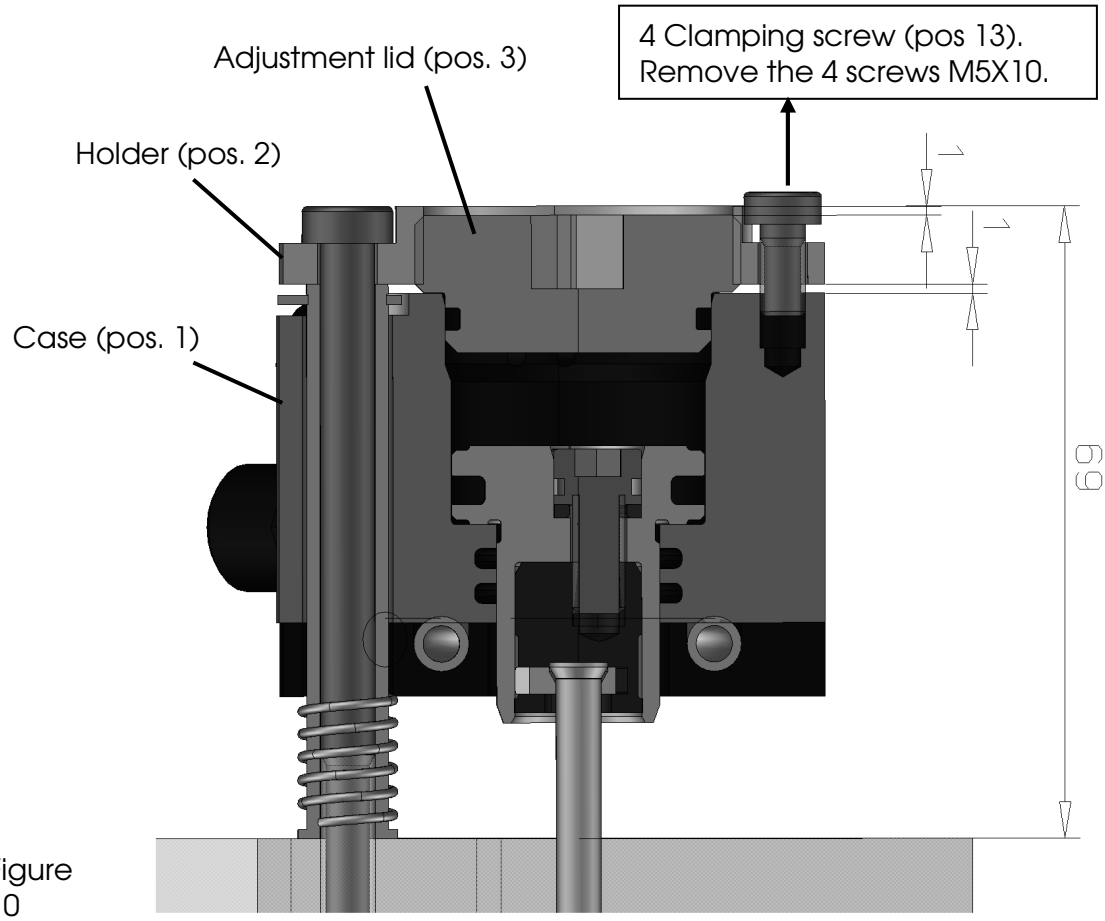


Figure 10

- For pin adjustment turn off hydraulic pressure.
- Systems filled with plastic must be heated up.
- Unscrew the 4 clamping screws (pos 13) M5X10 about 1mm.

Attention!

Danger of crushing! Don`t reach under the Piston rod.

4.2.2. Final setting (pin adjustment) gradually

Step 2

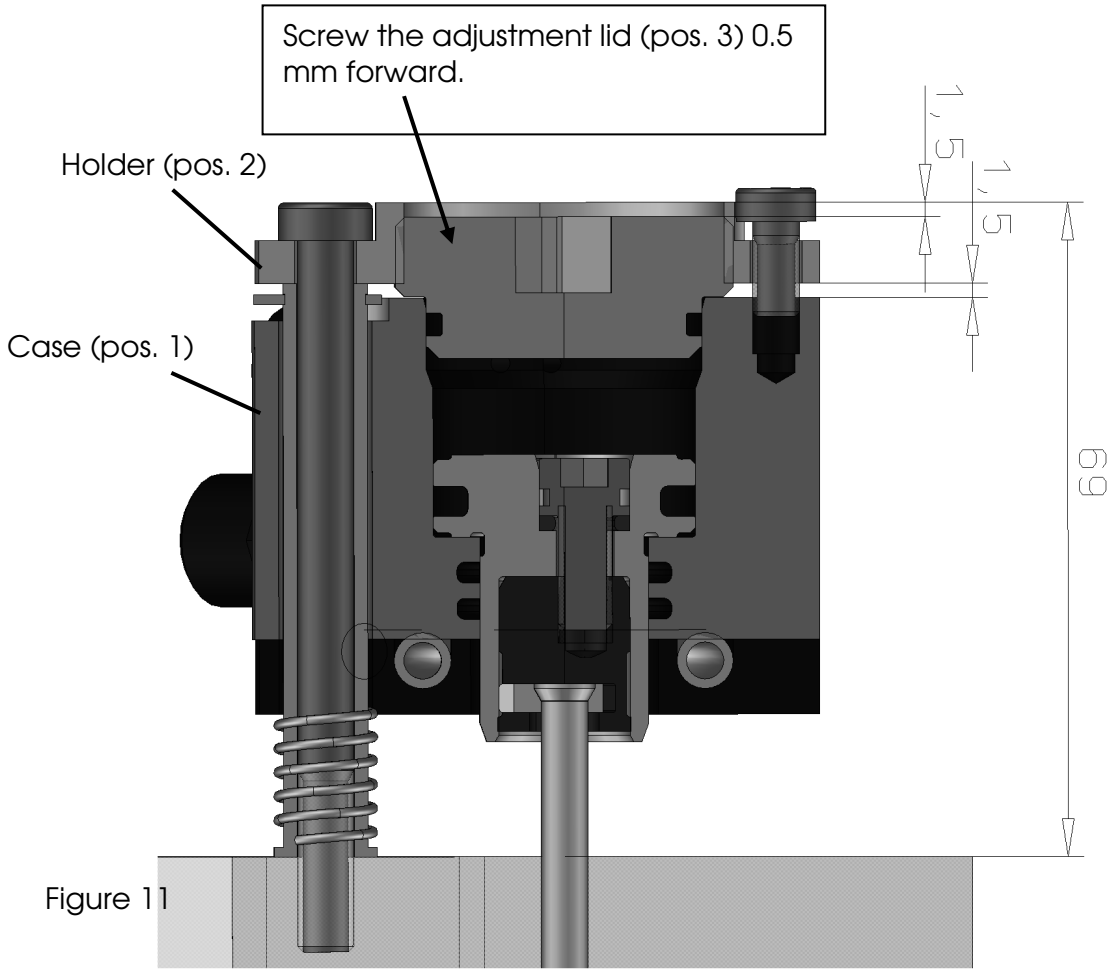


Figure 11

- Turn the lid in clockwise direction to move the pin forward, turn the lid in counterclockwise direction to move the pin back, according to vernier.
- The adjustment (pos. 3) lid was screwed forward about 0.5 mm.
- The case (pos. 1) with cooling plate (pos. 6) moved forward about 0.5 mm by the fixed holder (pos. 2) .
- The distances change up to 1.5 mm.
- The piston stroke is minimally 10 mm.

4.2.2. Final setting (pin adjustment) gradually

Step 3

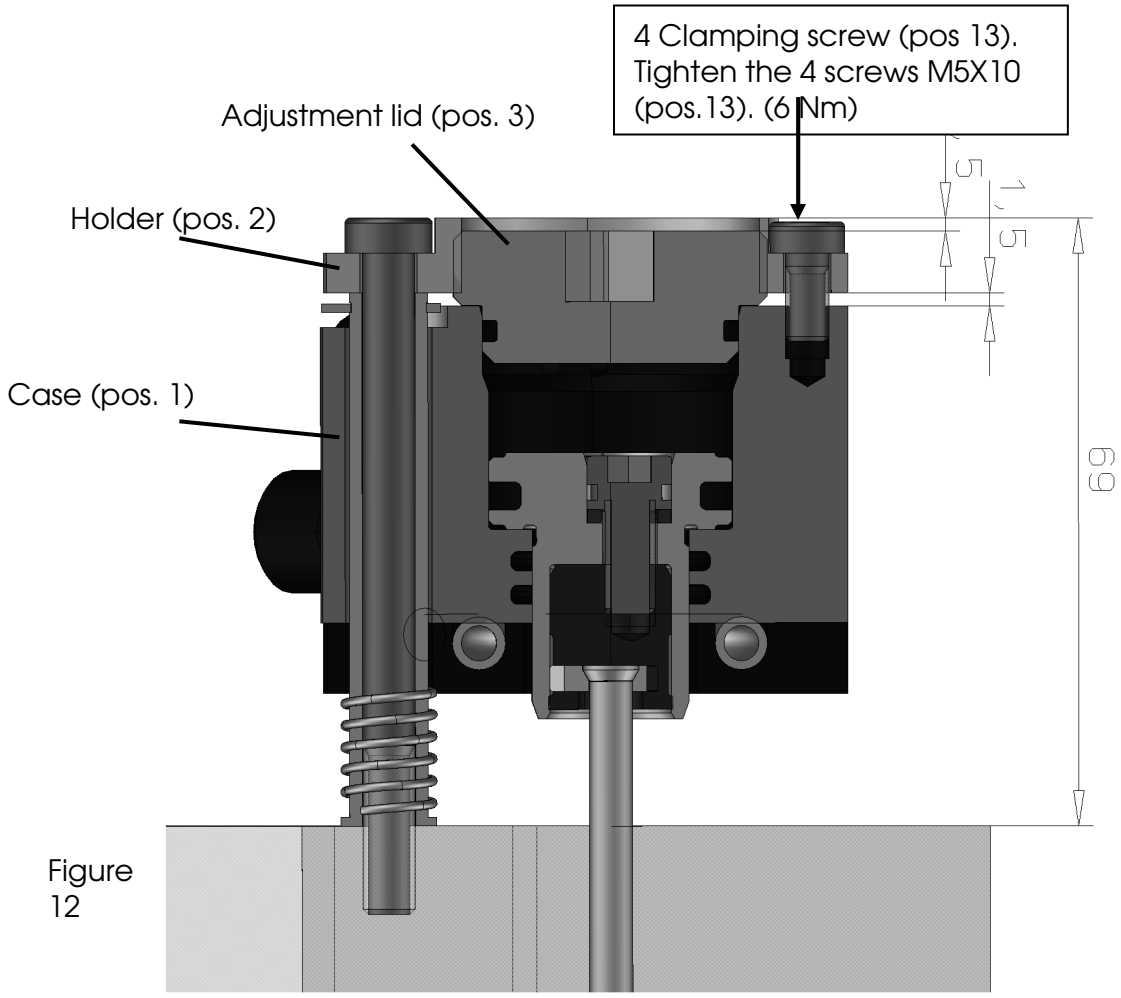


Figure 12

- Then retighten the 4 screws M5x10 (pos. 13).

Tightening torques		
Pos. 13	Allen head screw DIN 7984 M5X10 10.9	6 Nm

- The position is adjusted and locked.
- Connect hydraulic pressure

4.3. Uncoupling of the pin gradually

Step 1

Change over system to pressure less!

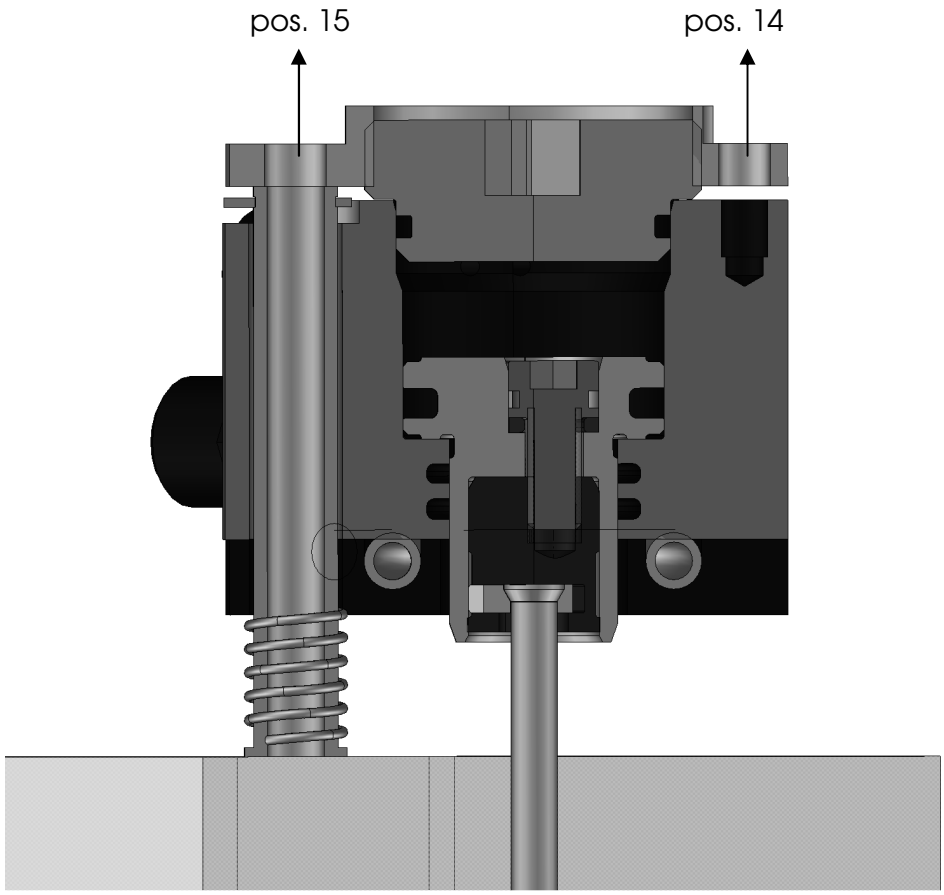


Figure 13

- To uncouple the pin remove the following screws:

  4 pcs. M5 X 10 (pos 14)

  4 pcs. M6 X 75 (pos 15)

  entfernt.

4.3 Uncoupling of the pin

Step 2

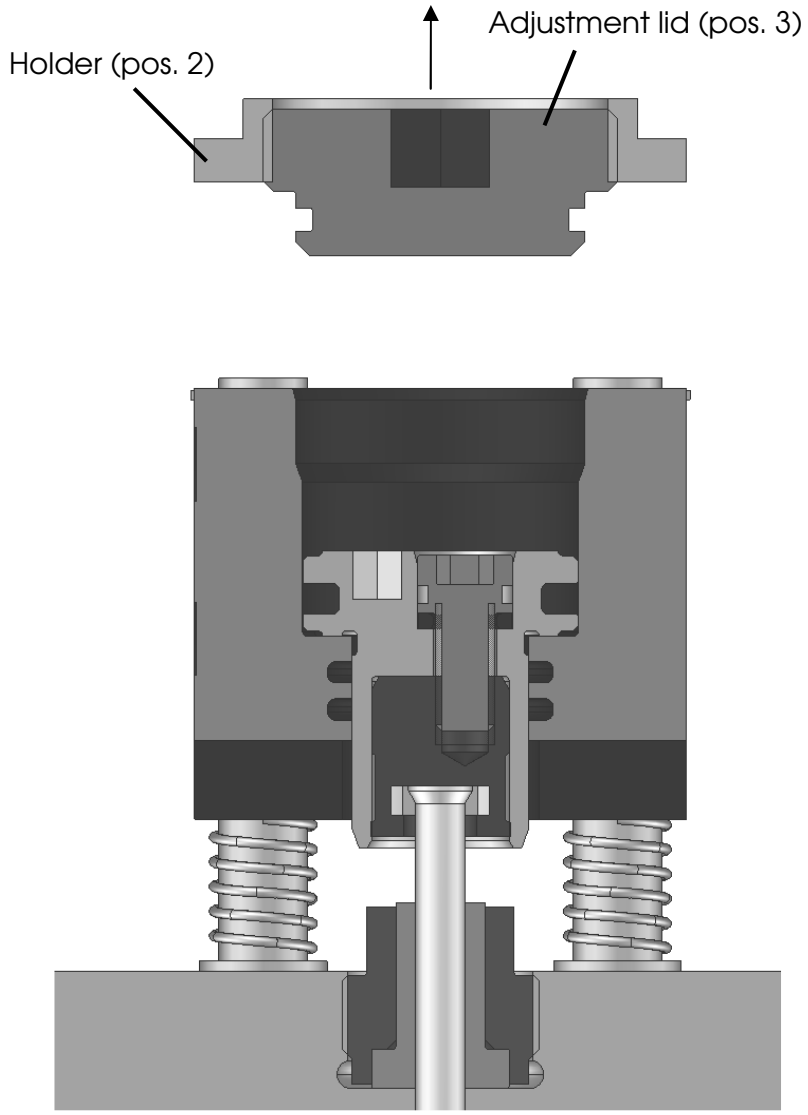


Figure 14

- Mark the position of the adjustment lid (pos. 3) in the holder (pos. 2) (vernier).
- Draw the holder (pos. 2) upwards together with the adjustment lid (pos. 3).

4.3 Uncoupling of the pin

Step 3

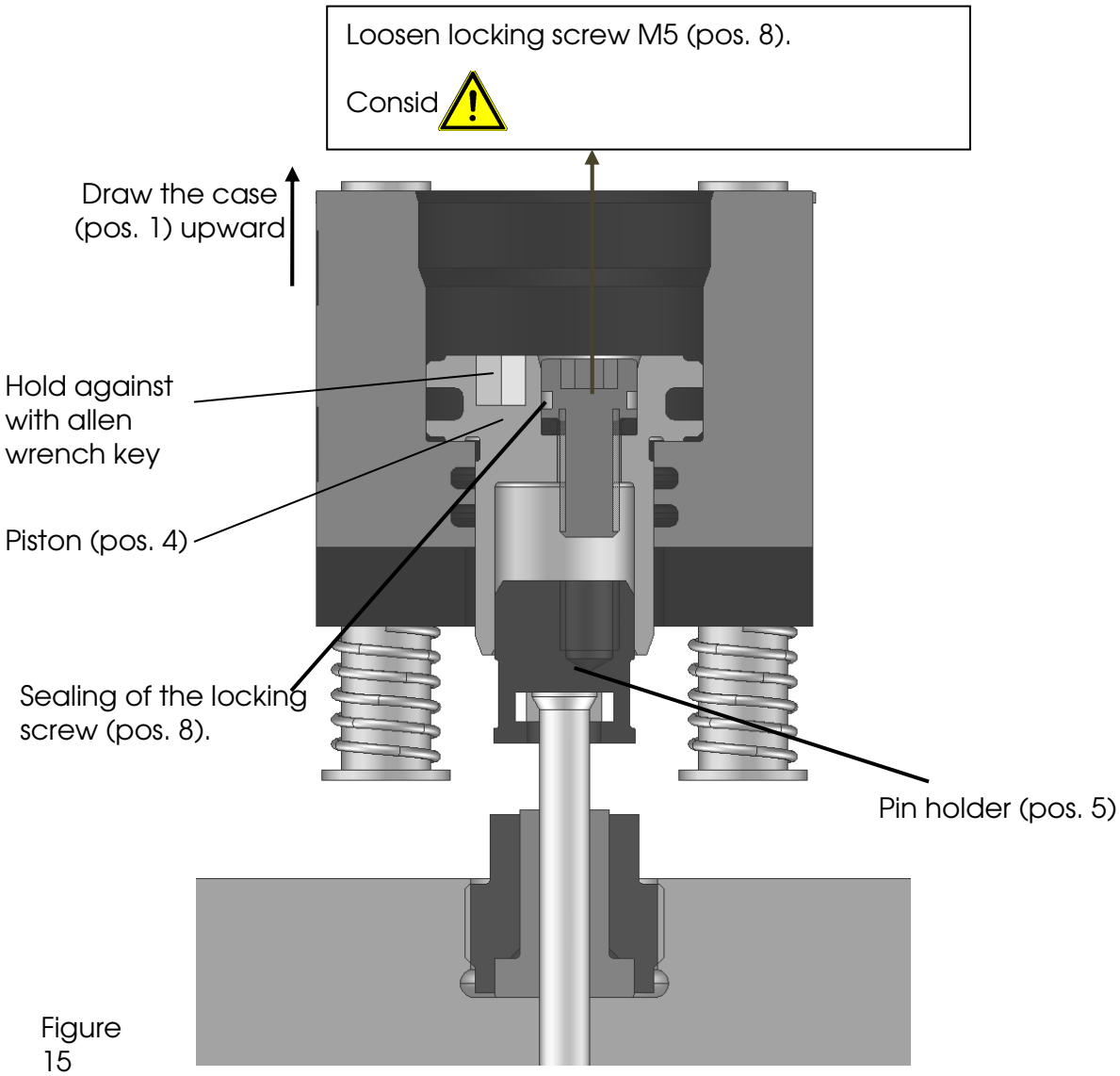

Loosen locking screw M5 (pos. 8).
Consid
Draw the case (pos. 1) upward
Hold against with allen wrench key
Piston (pos. 4)
Sealing of the locking screw (pos. 8).
Pin holder (pos. 5)

Figure 15

- Remove the screw (pos. 8) in the piston (pos. 4) and loosen the pin holder (pos. 5). (Piston (pos. 4) hold against with allen wrench key).

- To avoid the escape of hydraulic oil pull the case (pos. 1) upwards if you remove the locking screw (pos. 8).
  Thus the sealing of the locking screw (pos. 8) is still guaranteed.

4.3 Uncoupling of the pin

Step 4

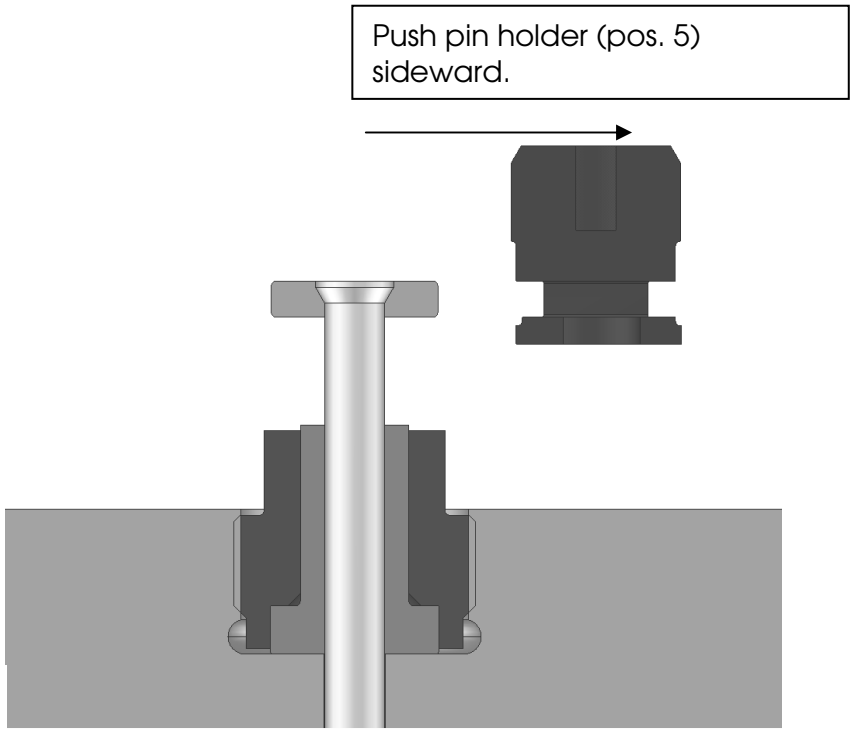


Figure 16

- Now push the pin holder (pos. 5) sideways off the pin.

5. Pin removal

To withdraw the pin, first must be uncoupling the Pin.
See **Point 4.3**

Withdraw pin off nozzle head with
nipper or with suitable pin take-off aid.

Attention !

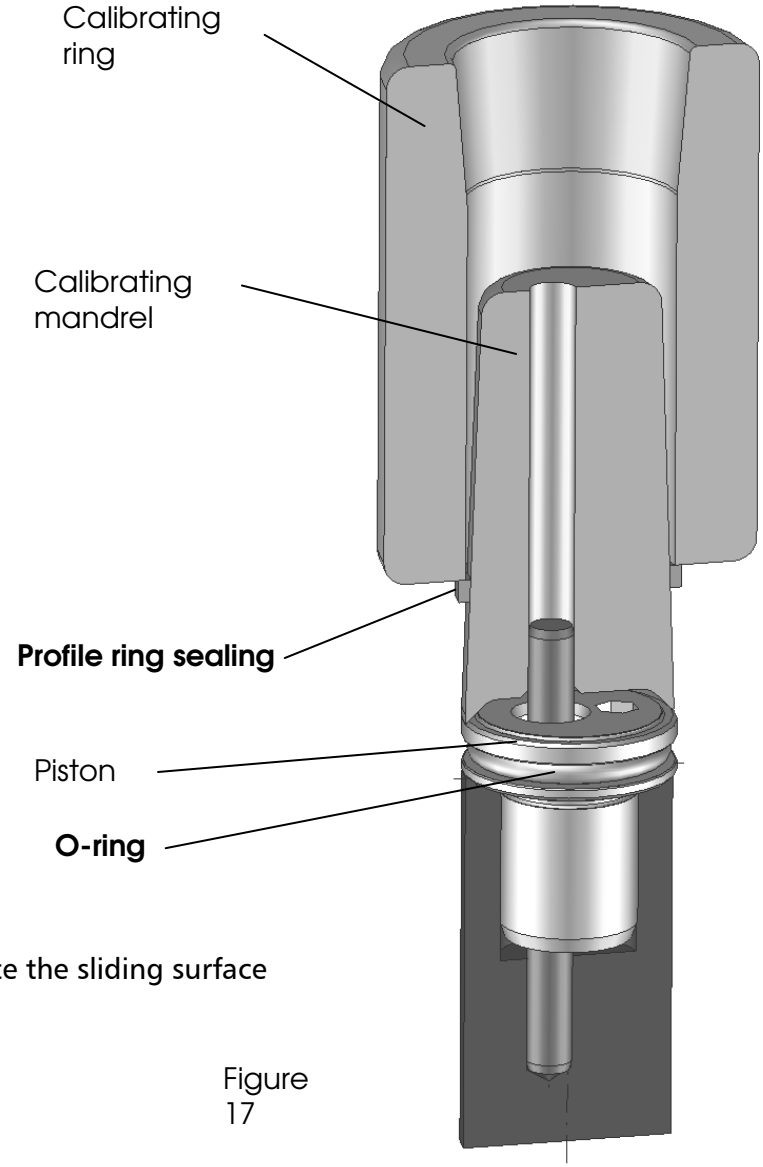
If it is plastic in the Manifold and in the nozzle, tey must be heat up to melting temperature.

6. Sealing change

6.1. Piston sealing (profile ring sealing) installation.

Step 1

- Insert the **O-ring** in the piston groove, then push the **profile ring sealing** over the calibrating mandrel by the use of a calibrating ring.
- Thus the **profile ring-sealing** is stretched and pushed into the piston groove.



Lubricate the sliding surface

Figure 17

The calibrating tool can be ordered by PSG.

6.2. Piston sealing (profile ring sealing)

Step 2

Turn the calibrating ring and push it at the conical side over the profile ring sealing to unstretch the sealing. (First remove the calibrating mandrel)

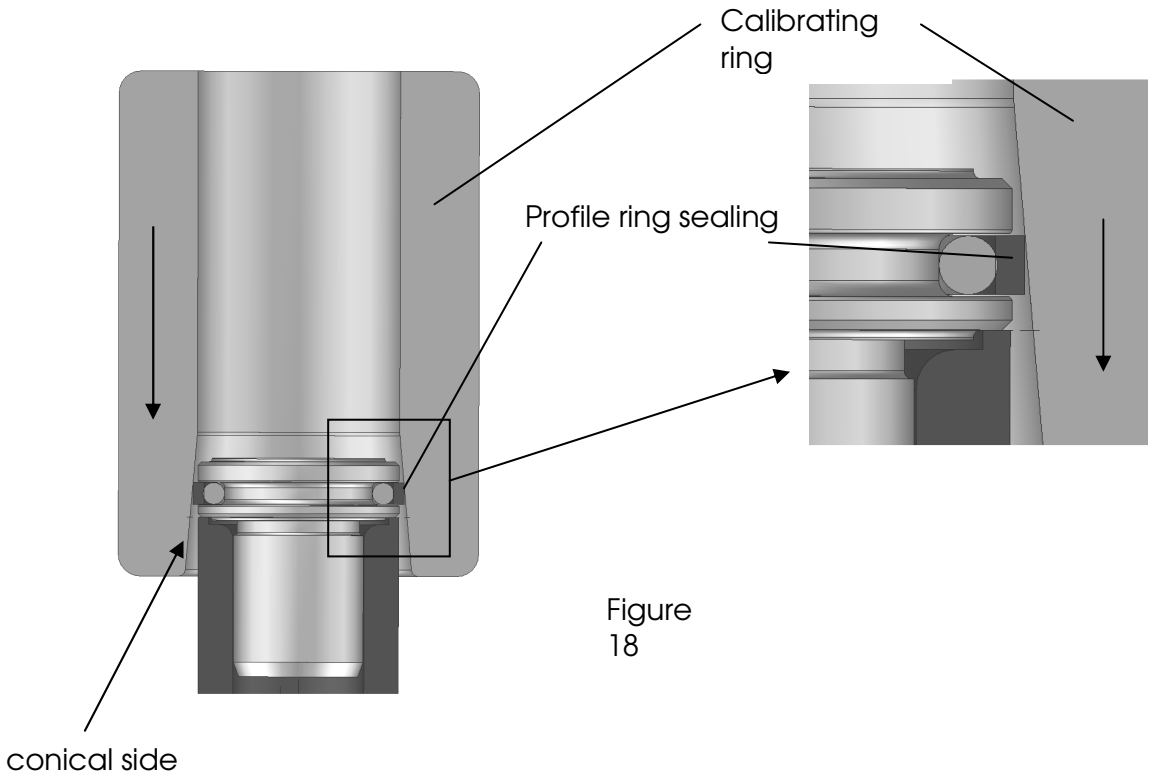


Figure 18

Graphed are the important parts of the calibrating tool.

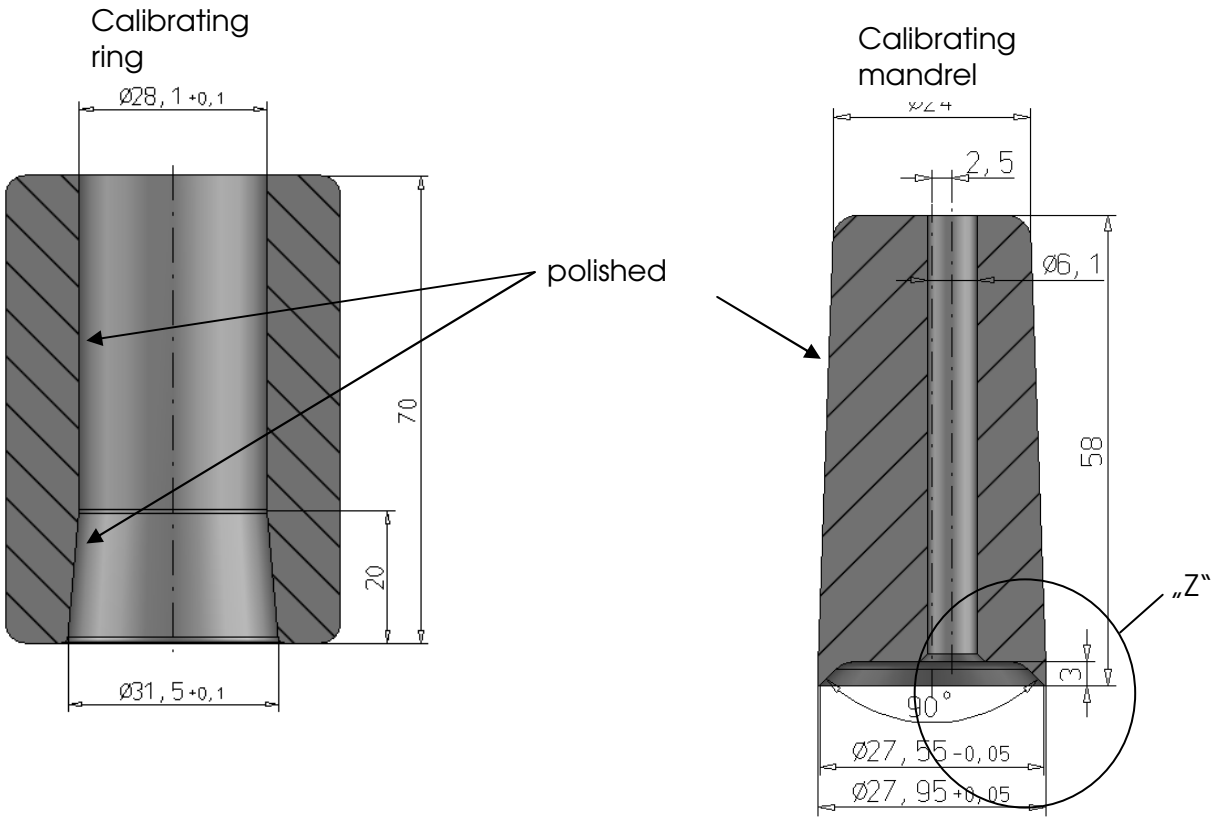
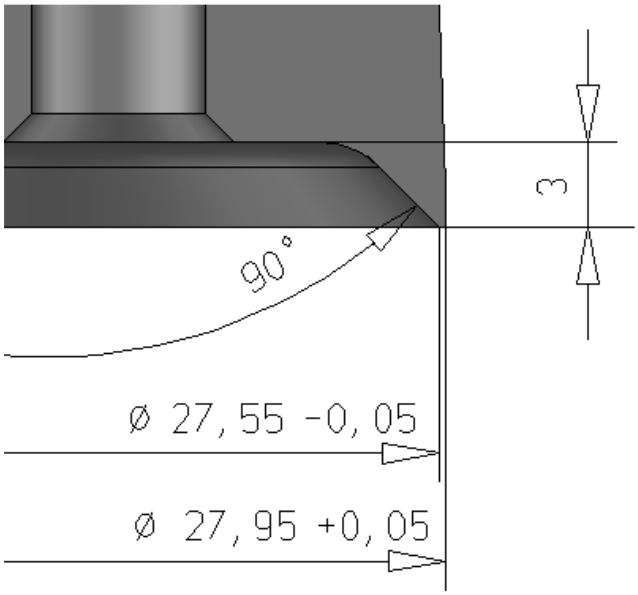


Figure 19

Section „Z"

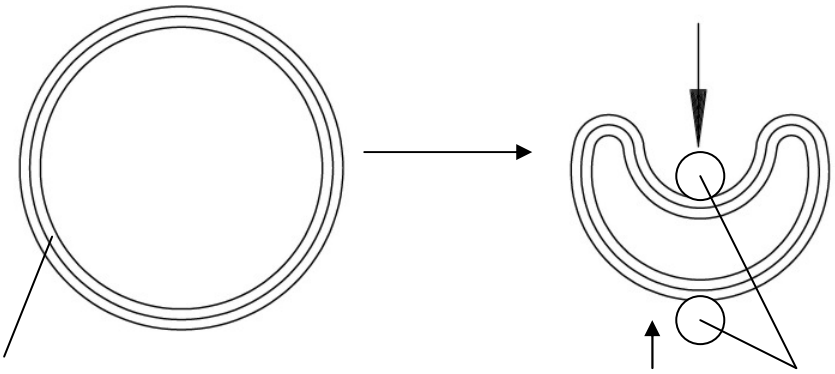


5.3 Lip seals

Lubricate the lip seal (piston rod seal). Squeeze carefully with your fingers to warm and soften the lip seal.

Shape like this

Bild 20



Lip seal

Take between fingers or nipper.
Carefully: don't bend!

Then press the sealing carefully into the appropriated groove in the cylinder case.

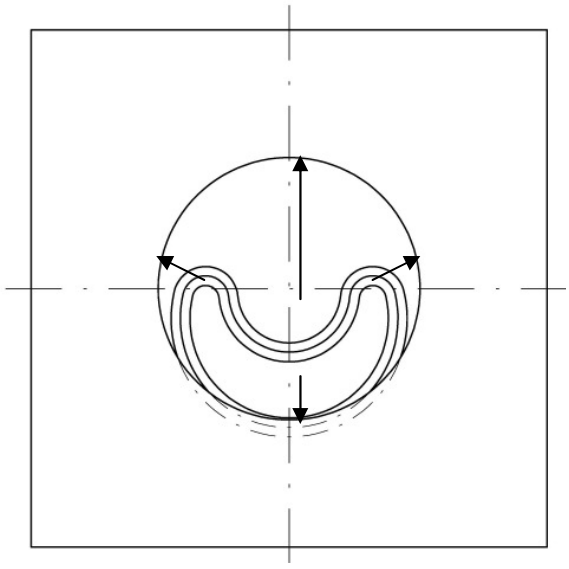


Figure 21

(Cylinder case seen from above)

- Caution ! Consider, that the lip seals point in the right direction.

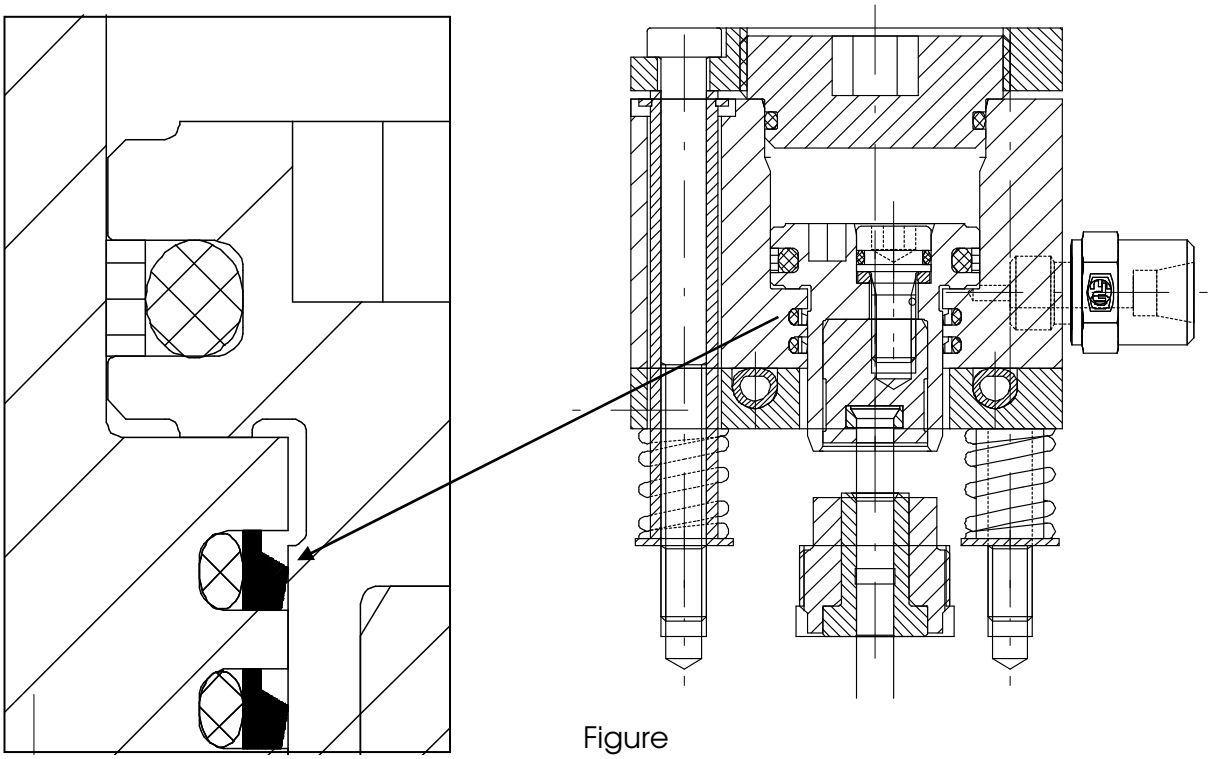


Figure 22

- Beat carefully against the seal with a wood or a brass small tube.

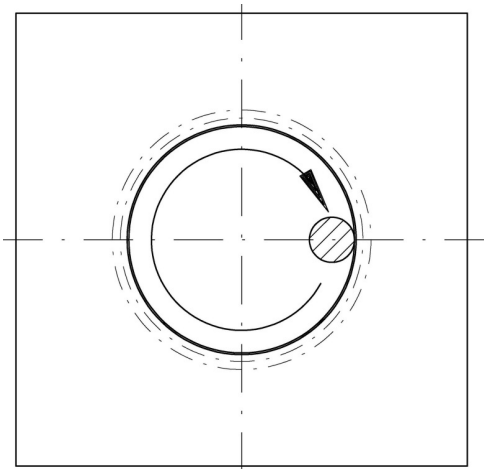


Figure 23